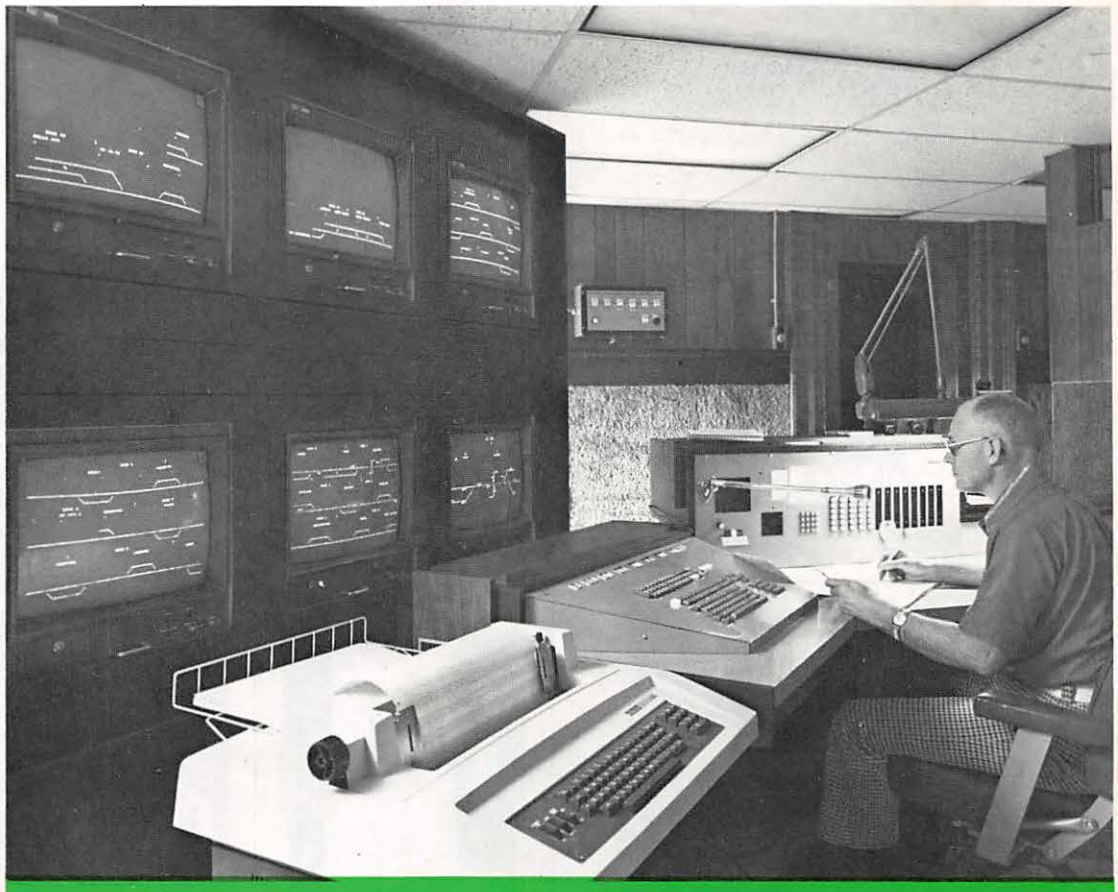
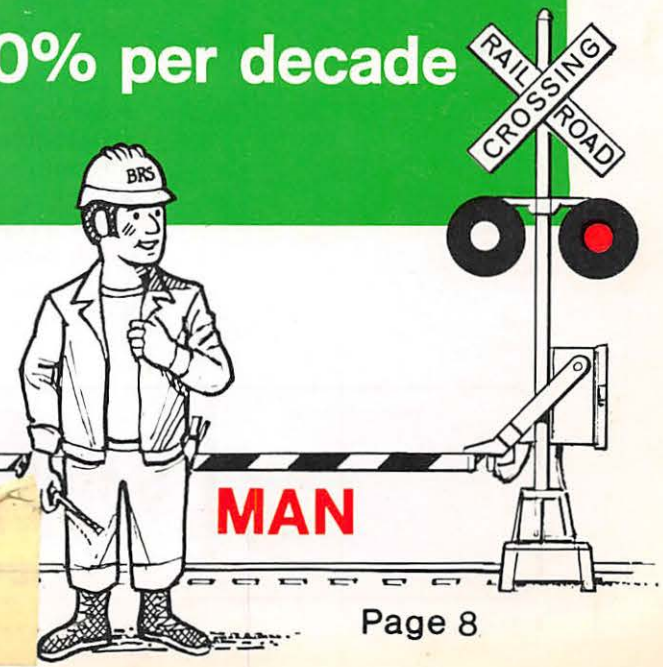
The SIGNALMAN'S Journal



Centralized traffic control mileage grows 10% per decade

SEPTEMBER 1977



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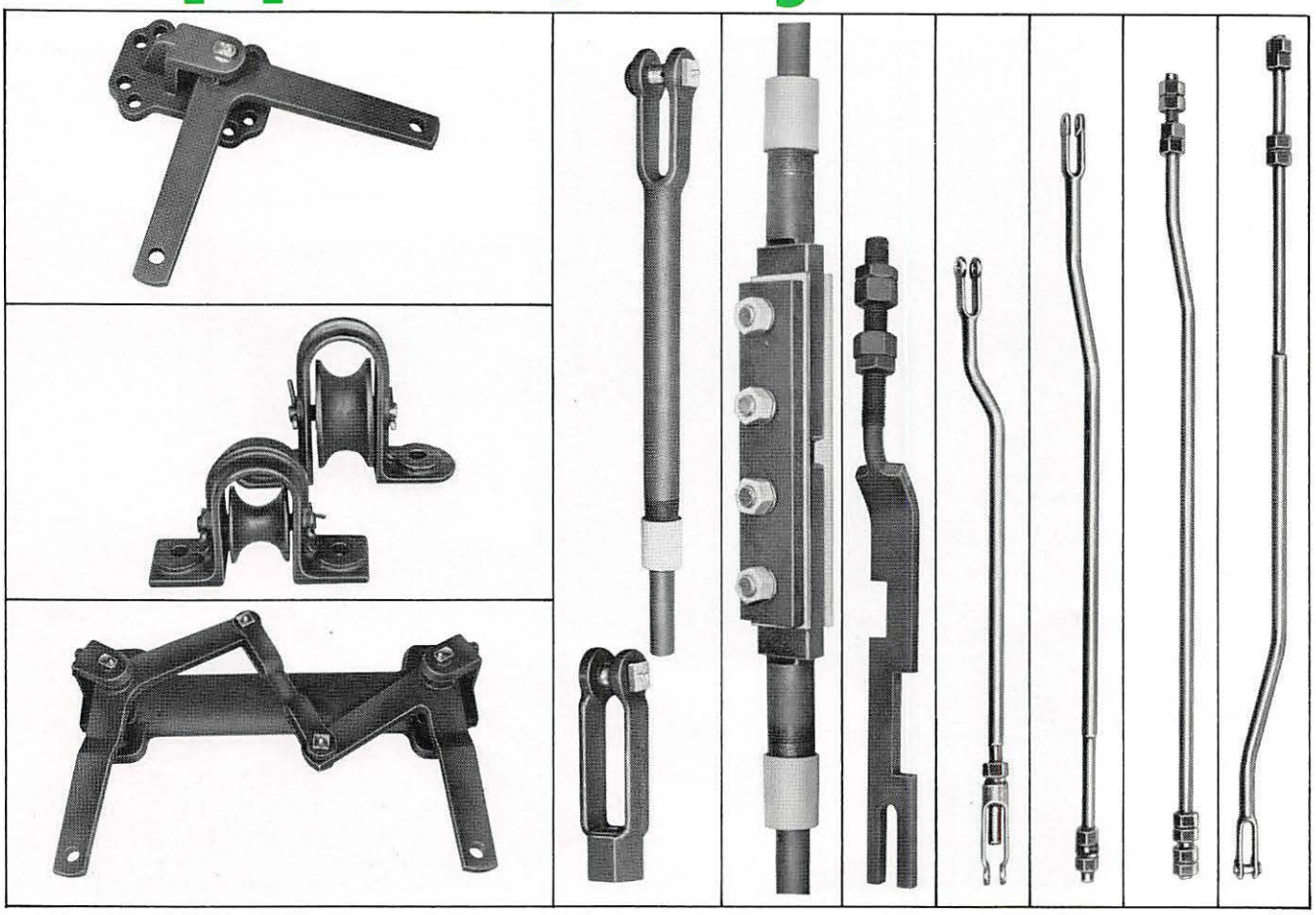

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Volume 58 Number 7 September 1977

ROBERT W. McKNIGHT
Editor & Manager
601 West Golf Road
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312-439-3732

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OFFICIAL PUBLICATION BROTHERHOOD OF RAILROAD SIGNALMEN

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Chamberlain's Message

Need for skilled signalmen continues

The railroad industry's mass transportation capabilities are a known factor to those of us in the railroad industry, and it is most encouraging to read the projections of a nationally known market research firm that forecasts that the railroads' share of intercity freight traffic will rise from 38% to 52% over the next twenty years.

Frost & Sullivan also predict that:

—Piggyback will account for 40% of all rail freight shipments by 1995.

—Intercity passenger travel will rise to 3% compared to 0.1% today.

To meet the above growth in business, it will be necessary for the railroads to:

—More than double the locomotive fleet to 56,000 units with over half of them electric locomotives.

—Spend $16.3 billion for track, yard and signal improvements, including electrification.

—Spend $3 billion for signal and control systems.

For the railroads, it means tremendous growth in traffic. Railroads have already indicated that they can handle the growth in coal traffic. Some, such as Burlington Northern and Union Pacific, are installing extensive centralized traffic control projects to upgrade their coal-carrying lines and increase track capacity.

Now is the time to move forward to get the railroad plant in top condition to handle this increased traffic. The Frost & Sullivan report is but one of many predicting traffic growth for the railroads. Population growth and the energy crunch are positive factors that give solid support for these projected growth figures.

The railroads must be ready and able to handle this traffic. To do so, they must start now by:

—Upgrading their track and roadbed.

—Installing new and modernized signal systems.

—Training employes to install and maintain these systems.

The railroads must start now on this long-range project. Most major railroads have signal training agreements with the Brotherhood of Railroad Signalmen. They are turning out graduates who are going into construction and maintenance with a fine background in the fundamentals of signaling. Reports we receive from our members indicate that they are well satisfied with the type of training they are receiving. Additionally, we are awarding Certificates of Recognition to these successful students for their accomplishments. We find wide acceptance of this award, and are happy and proud to recognize our members' achievements in this vital training area.

The sophisticated signal and control systems now going into service are equipped with solid-state and electronic components. The training schools must provide the educational background in electronics. Some of the earlier railroads in the training function, such as Canadian National, have expanded their signal training programs to include electronics. This will become standard in the near future. Other railroads are adding electronics to their basic signal training programs.

While not an alarmist, we must make the point very clear that now is the time for the railroads to continue their signal training programs at full force so that trained men will be available to meet the manpower requirements for skilled signalmen. While there is an immediate emphasis on rail-highway grade crossing safety warning systems, the long range goal of providing skilled signalmen is still one to be met.

Another sign has been posted about traffic increases, and the important need for railroads in the U.S. to provide mass transportation safely and efficiently. This sign should be recognized and heeded.

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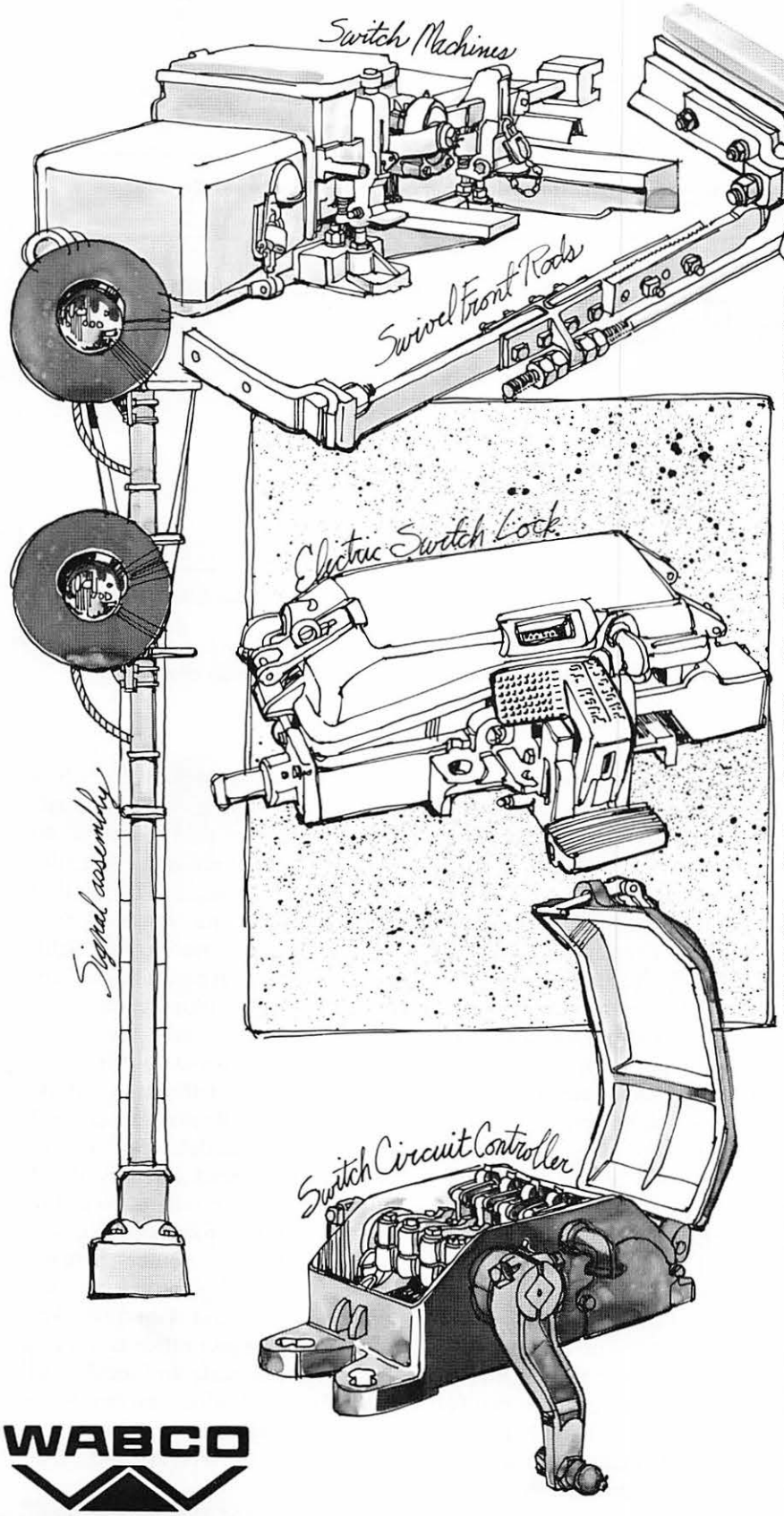

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Ruggedly constructed units available in either four- or six-way sizes for two and three position and polarized applications.

Signal Assemblies

Available with either searchlight or colorlight signal units.

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Other performance-tested WABCO parts include junction boxes, foundation piers, bootlegs and equipment cases. WABCO has the hardware you'll need for mainline signaling. Write us.

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News

Northeast Corridor will be modernized

Secretary of Transportation Brock Adams has announced a series of key planning decisions for the $1.75 billion Northeast Corridor Improvement Project. They include a new electrification system; cross-tie installation; and signaling, communication and traffic control for the corridor.

In 1976 Congress passed the Railroad Revitalization and Regulatory Reform Act authorizing improvements to the Northeast Corridor railroad from Boston to Washington, D. C. Responsibility was given to the Department of Transportation's Federal Railroad Administration to meet dependable trip time schedules of three hours and forty minutes between Boston and New York and two hours and forty minutes between New York and Washington by 1981. The proposals described below are designed to assure that the schedule goals are met.

New Electrification System

A new electrification system will power trains up to 120 mph along the Northeast Corridor from Washington, D. C. to Boston, Mass. The proposed $256 million electric traction power system will operate at 25,000 volts 60 cycles per second (25 kv 60 Hz).

For electrification purposes, the corridor can be viewed in three sections: from Boston south to New Haven, where there is presently no electrification; from New Haven to New Rochelle, N. Y., where an antiquated 11 kv 25 Hz system still exists; and from New Rochelle south to Washington, D. C., where aged equipment dating back to the early 1900s has reached the end of its useful life and where the railroad is also operating at 11 kv 25 Hz.

The proposed new corridor-wide system will draw its power directly from commercial, high-voltage utility lines requiring the construction of new substations, switching stations and some transmission lines. Signal circuits along the entire corridor will be modified or replaced for compatibility with the higher frequency and modernized to improve train control.

Between Washington and New York, installing electrification at 25 kv 60 Hz will eliminate the need for converters and the private transmission system operated by the railroads. The cost of the new equipment will be considerably less than repairing and replacing the old, worn-out machinery. The higher voltage requires up to an additional six inches of clearance at some tunnels and bridges in existing electrified areas. Where there is no electrification, clearances up to two feet may be required. This will be accomplished through bridge and catenary modifications and by lowering the track level.

Because regional plans from New Rochelle to New Haven have established a 12.5 kv 60 Hz system, the FRA has proposed a modification that enables operation 12.5 kv, until all Connecticut and New York transit cars are converted to the higher voltage. This dual capability will add an estimated $6 million to the cost of electrification but save the cost of converting the cars at this time.

The new electrification for the New Haven to Boston segment will require the installation of a lightweight, high-speed catenary in addition to the substations, switching stations and transmission lines to commercial power sources that will be installed throughout the corridor.

The Northeast Corridor Improvement Project office is working with regional, state and local transportation authorities to develop a mutually satisfactory program of equipment conversion and compatibility.

The proposed system is econom-

25 kv 60 Hz
($ in Millions)

	Wash., D. C./ New York, N.Y.	New York, N.Y./ New Haven, Conn.	New Haven, Conn./ Boston, Mass.
Catenary	$ 17	$ 15	$ 81
Substations	41	9	19
Transmission	15	4	12
Bridges	2	0	30
Tunnels	5	0	0
Dual System	0	6	0
Sub-Total	$ 80	$ 34	$142

Total = $256 Million

Estimated costs for electrification changes in the Northeast Corridor

($ in Millions)

	Signals	Train Control	Communications
Washington, D.C./ Wilmington, Del.	$ 12	$ 32	$ 6
Wilmington, Del./ New York, N.Y.	64	0	12
New York, N.Y./ New Rochelle, N.Y.	2	5	1
New Rochelle, N.Y./ New Haven, Conn.	2	0	1
New Haven, Conn./ Boston, Mass.	21	30	7
Sub-Total	$101	$ 67	$ 27

Total = $195 Million

Estimated costs for signal, train control and communication changes.

ically sound and will provide a reliable, electric power supply and distribution system to support high-speed intercity passenger service and commuter and freight services along the Northeast Corridor.

Signaling, Communications and Centralized Traffic Control

A new communications, signaling and traffic control system has been planned for the Northeast Corridor. It will include:

(1) Modifying track circuits for 60 Hz compatibility.

(2) Repairing or replacing deteriorated cables, obsolete relays and other components.

(3) Installing centralized traffic control (ctc) in three areas from Boston to New Haven with control at Boston; from New Rochelle to New York City with control at Penn Station in New York City; and from Wilmington to Washington with control at Philadelphia.

(4) Relocating signals to provide safe stopping distances.

(5) Eliminating wayside signals, except at interlockings, to reduce vandalism and maintenance costs.

(6) Adding a "stop" and "80 mph" indication to the cab signal system to increase safety and reduce trip times.

Signaling, communications and central traffic control are essential elements for a safe and efficient rail service that incorporates high-speed passenger, commuter and freight train operations. Trains can be scheduled to permit maximum use of track capacity at the highest possible speeds.

Existing signaling and communications systems along the corridor are old and increasingly failure-prone. The new design will include corridor traffic control.

Long Island wants UMTA money for signal projects

Seeking funds from the Urban Mass Transportation Administration, Long Island recently reported that it plans to spend UMTA funds as follows: $1,750,000 for 6.6 miles of double-track automatic block signaling with automatic speed control on trains on the line between Hicksville and Republic, NY. Also included in the project will be the remote control of "B" and "PW" interlockings from Divide Tower at Hicksville, NY. In a second project, LI plans to spend $1,250,000 for automatic block signaling and automatic speed control for trains operating between Babylon and Patchogue, NY. Control of "Y" and "PD" interlockings will be from Babylon.

Test track planned for former EL lines

A 3-mile test track will be constructed for testing of 25 kv, 60 Hz power for the former Erie Lackawanna suburban lines in northern New Jersey. The present 3 kv dc system is to be converted to 25 kv, 60 Hz electric traction. ConRail, which now owns and operates the suburban service, is planning to convert to the higher voltage, commercial frequency for the entire 73-mile suburban service.

UP to install 210 miles of ctc

Union Pacific will spend nearly $23 million over the next three years to install centralized traffic control on 210 miles of its double track main line between North Platte, NE and Cheyenne, WY.

The project also calls for expansion of the track facilities in UP's Cheyenne terminal. This work will include extension of the third running track two miles east from Cheyenne and construction of a fourth running track approximately two miles long through the Cheyenne terminal.

Installation of a centralized traffic control system increases the capacity of a single line track by about 80% and permits the operation of trains in both directions on each set of tracks on a double main line system. At present, all westbound UP trains use the north rails and all eastbound trains use the south rails between North Platte and Cheyenne.

All grading work for extension of the third running track at Cheyenne has been completed and crews are currently rearranging tracks within the yard in preparation for construction of the fourth running track through the terminal. At North Platte, work is scheduled to begin in the near future on a new CTC building to house the control machine when the installation is complete.

. Plans call for construction of a building to house dispatchers and CTC equipment at North Platte.

The proposed schedule for the entire project calls for completion of the Cheyenne track work by late October, 1977, and installaion of the CTC network east from Cheyenne as far as Pine Bluffs, Wyo., by the end of this year. In 1978, the road plans to install CTC west from North Platte to Julesburg, Colo., and extend construction east from Pine Bluffs to Owasco, about four miles east of Kimball, Neb. The remainder of the project will be completed in 1979.

ICG applies to FRA for signal project funds

In an application to the Federal Railroad Administration for redeemable preference shares, Illinois Central Gulf indicated that some of the money will be spent on signal installations. Specifically, ICG plans to install centralized traffic control on 164.9 miles of freight line between Edgewood, IL and Fulton, KY. On the Memphis, TN-Jackson, MS line via Gwin, MS, 212.9 miles of ctc will be installed. Presently there is no signaling on the Memphis-Jackson line, while automatic block signals are in service on the Edgewood-Fulton line.

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CTC shows steady growth

In 50 years, centralized traffic control has grown from 40 miles of road to over 42,000 miles. Such growth is now advancing at the rate of 10% per decade or 1% per year. Will the growth continue? Yes, and there are many factors that indicate ctc will be installed on U.S. and Canadian railroads for several years to come. Some favorable items include:

— General increase in rail traffic over the next few years. A Frost & Sullivan market research firm predicts that the railroads share of intercity freight traffic will rise to 52% by 1995. Part of the reason for this growth is the energy crunch—railroads are most efficient energy users—and population growth.

— To meet the general increase in traffic, track capacity on many rail lines will have to be increased. An efficient means of increasing traffic capacity, short of adding more tracks, is to install ctc.

— Coal hauling traffic from western states has increased traffic on many lines. CTC has provided the increased track capacity to handle not only these unit coal trains but to do so without interfering with normal traffic. Burlington Northern (front cover picture) and Union Pacific are just two railroads that are making extensive ctc installations to handle increased coal hauling traffic.

For signalmen it means continued employment for installing and maintaining ctc systems. The projected 1% growth rate per year comes to about 500 road miles, which is a good average. In many years, the average is nearer 800 road miles.

Several trends are developing concerning the application of ctc and the type of systems hardware and software used. From the start, the first systems were direct wire control, then came use of carrier to extend ctc to larger territories, and following World War II came the use of microwave to handle a greater number of circuits, and last but certainly very importantly, came the use of a computer to aid in the operation of ctc. Developing trends include the following:

— For high capacity lines, roads such as ConRail's former New York Central mainline, Union Pacific and Canadian National have equipped double-track lines with ctc. Burlington Northern is also converting double-track automatic block signaling to double-track ctc on mainlines in Illinois and Iowa to improve operations and increase track capacity.

— Extension of sidings to hold 125 or more cars and in some instances really going to alternate sections of single

Centralized Traffic Control

In Service as of January 1

	1963 Miles		1970 Miles		1977 Miles	
Railroad	Road	Track	Road	Track	Road	Track
AT&SF	2,579	3,256	2,822	3,639	3,192	4,125
BAR	18	18	17	19	22	24
B&LE	33	173	133	173	133	171
B&M	538	893	332	387	350	405
BN	2,987	3,309	3,820	4,217	4,487	4,905
CHESSIE	2,426	3,077	2,835	3,737	2,775	3,589
C&NW	147	240	210	311	211	299
CMSTP&P	949	1,067	993	1,143	1,001	1,122
CRI&P	958	1,255	1,032	1,403	793	877
CONRAIL	3,698	5,164	4,642	6,359	4,452	6,129
D&H	335	460	428	555	420	539
D&RGW	649	671	793	843	924	991
DT&I	13	13	28	28	28	28
DM&IR	71	80	74	91	69	85
EJ&E	8	10	12	16	12	15
FEC	27	27	240	304	278	356
GTW	99	99	141	141	146	152
ICG	580	627	881	967	899	992
KCS	263	268	266	270	449	453
LI	156	318	61	95	77	135
L&N	2,002	2,013	2,321	2,427	2,360	2,527
MEC	33	33	42	43	64	76
MKT	22	23	23	23	50	50
MP	1,733	2,066	2,139	2,496	3,231	3,668
N&W	2,695	2,920	2,942	3,403	3,318	3,773
P&LE	73	103	144	221	144	221
RF&P	112	225	112	225	113	234
STL-SF	1,157	1,220	1,281	1,337	1,284	1,344
SCL	2,861	3,067	3,077	3,526	3,299	3,815
SOO	100	100	338	367	375	375
SOU	1,061	1,469	1,419	1,967	1,544	2,170
SP	2,479	2,578	2,947	3,077	3,534	3,672
UNION	31	54	31	59	31	59
UP	1,874	2,093	1,963	2,192	2,166	2,647
WP	753	753	761	761	769	769
TOTALS	33,739	39,918	39,442	47,097	42,870	50,740

Data used in the above table came from the Interstate Commerce Commission's Bureau of Safety and the Federal Railroad Administration, and covers Class I railroads in the United States. Mileage for the Clinchfield is included in the L&N.

and double-track enables roads to make non-stop meets and passes. Southern, which was a pioneer in this single-double track alternation is even studying the possibility of connecting some of its single-track sections to provide long double-track mains. With unit coal trains of 100 cars, it may require more extensive sections of double track to keep other traffic from being delayed.

— Centralization of dispatching functions is being facilitated by using a computer to help handle the physical chore of operating switch and signal controls at the control center. Also, the use of high-speed communications enables a railroad to headquarter all dispatchers at a central location. Roads such as Denver & Rio Grande Western (at Denver, CO); Illinois Central Gulf (at Chicago, IL), St. Louis-San Francisco (at Springfield, MO) and Western Pacific (at Sacramento, CA) have centralized the dispatching function for the entire railroad. Others, which do not have extensive mileages and might be considered as centrally controlling large interlockings would include the Kansas City Terminal (at Kansas City, MO), Richmond, Fredericksburg & Potomac (at Richmond, VA) and the Union (at Pittsburgh, PA).

— Increased use of high-speed, solid state coding systems to handle controls and indications between field locations and the ctc console.

— Use of audio frequency track circuits for rail-highway grade crossing warning systems has become a

Federal Railroad Administration Rules, Standards & Instructions for Signal Systems apply to ctc.

Subpart D- Traffic Control Systems

STANDARDS

Sec. 236.401 Automatic block signal system and interlocking standards applicable to traffic control systems.

Sec. 236.201 Track circuit control of signals.

Sec. 236.202 Signal governing movements over hand-operated switch.

Sec. 236.203 Hand operated crossover between main tracks; protection.

Sec. 236.205 Signal control circuits; requirements.

Sec. 236.206 Battery or power supply with respect to relay; location.

Sec. 236.303 Control circuits for signals, selection through circuit controller operated by switch points or by switch locking mechanism.

Sec. 236.307 Indication locking.

Sec. 236.310 Signal governing approach to home signal.

Sec. 236.311 Signal control circuits, selection through track relays, and through signal mechanism contacts and time releases at automatic interlocking.

Sec. 236.402 Signals controlled by track circuits and control operator.

Sec. 236.403 Signals at controlled point.

Sec. 236.404 Signals at adjacent control points.

Sec. 236.405 Track signaled for movements in both directions, change of direction of traffic.

Sec. 236.406 Indication of track circuit occupancy at controlled points.

Sec. 236.407 Approach or time locking; where required.

Sec. 236.408 Route locking.

Sec. 236.409 Control machine; indication of switch operation.

Sec. 236.410 Locking, hand-operated switch.

RULES & INSTRUCTIONS

Sec. 236.426 Interlocking rules and instructions applicable to traffic control systems.

Sec. 236.327 Switch, movable-point frog or split-point derail.

Sec. 236.328 Plunger of facing-point lock.

Sec. 236.330 Locking dog of switch-and-lock movement.

Sec. 236.331 Repairs to switch and signal valves and cylinders.

Sec. 236.332 Air distribution system; draining condensation.

Sec. 236.333 Pole changer on electric switch operating mechanism.

Sec. 236.334 Point detector.

Sec. 236.342 Switch circuit controller.

INSPECTIONS & TESTS

Sec. 236.476 Interlocking inspections and tests applicable to traffic control systems.

Sec. 236.377 Approach locking.

Sec. 236.378 Time locking.

Sec. 236.379 Route locking.

Sec. 236.380 Indication locking.

Sec. 236.382 Switch obstruction test.

Sec. 236.383 Valve locks and valve magnets.

Sec. 236.385 Time releases and timing relays.

Sec. 236.386 Restoring feature on power switches.

standard so that signal maintainers are now faced with maintaining at least two types of track circuits where highway crossings are located. The extensive use of continuous welded rail has fostered use of afo track circuits at these grade crossings.

— With more trains, and in many cases operating at fairly high speeds—50 to 60 mph—ancillary devices such as hotbox detectors, dragging equipment detectors, rock slide fences, etc. are being installed in ctc territory. More devices to be maintained by signalmen. Also, it is becoming standard practice for information from these safety devices to be sent to the dispatcher. Thus at the control center there will be several hotbox detector readout units and recorders. Again, the concentration of equipment at the dispatching center is increasing not only in direct proportion to the mileage of ctc, but resulting from the installation of safety detectors in addition to the ctc.

Communications also plays an important role in ctc not only providing contact for the dispatcher to all wayside locations, but via two-way radio controls directly to crews of moving trains.

By the beginning of this year, there were 15 computer ctc installations in service and more are on order. It is probably now a standard to use a computer for control of a ctc system. Computer controlled functions include the following:

— Handle control, indication and logging functions.

— Provide a variety of dispatcher commands, editing and error checking features.

— Train identification (inputted by the dispatcher or an automatic car identification system) tracking, logging and display.

— Assisting in actual dispatching such as making meets and passes automatically.

— Performance reporting covering dispatcher's action, OSing of trains, reporting on train crews' time and pay, detection of equipment malfunctions or errors, etc.

— Reporting and displaying alarm situations.

Probably the biggest gain accomplished by the computer is that it has enabled a dispatcher to handle a larger ctc territory than he could handle without the computer. However, one must judge each case on its merits and individual conditions. Many roads are finding that while the computer-aided ctc machine enables the dispatcher to handle great territories, in some instances up to 500 miles of road, the ancillary duties of handling work orders and on-track time limits for maintenance-of-way signalmen require the use of more personnel at the ctc console. A few railroads have two dispatchers on duty during the first trick and revert to one dispatcher for second and third trick.

Southern Pacific was a pioneer in the use of automatic dispatching in which trains "make their own" meets. First, SP installed a relay system for this dispatching function on 523 miles of line between Yuma, AZ and El Paso, TX. In this system, a train will cause signals to clear far enough in advance so the train will always receive a

In metropolitan areas, centralized traffic control can provide a means for improving train operation not only for through movements but for local industry runs, transfers, and even commuter service. Roads such as Burlington Northern, CP Rail, Canadian National and ConRail have extensive ctc installations in metropolitan areas.

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Proceed indication, if traffic conditions allow. Ordinarily, the train will stay on the main track at siding locations. When the system senses a meet, however, the first of the two opposing trains to arrive will enter the siding. The second train will then hold the mainline.

SP has followed this relay automatic ctc system with a computer-controlled ctc system in Texas covering 590 miles between Sierra Blanca and Flatonia.

Somewhat related to automatic ctc is a feature used by some railroads to provide for train operation should the ctc code line fail. Upon failure of the code line, the system reverts to a form of automatic block signaling. In some cases, the trains clear signals as they proceed through the territory, in others the system reverts to straight automatic block signaling. Where opposing trains are involved, each train will arrive at an end-of-siding home signal showing a Stop aspect. Local controls are provided in bungalows at ends of sidings which can be operated under the direction of the dispatcher. These controls provide for movement of switches and clearing of signals, but in the case of a meet, the train crew is directed to contact the dispatcher for instructions before making their own arrangements.

This automatic block signal operation following ctc code line failure is used by several railroads including CP Rail, Seaboard Coast Line and Southern Pacific. A variation has been used by the Norfolk & Western on a light-traffic line to provide for abs operation enabling a dispatcher to operate two-ctc machines during second and third tricks. On first trick, a dispatcher is at both control machines.

Speaking of ctc control machines, some mention should be made of the evolution of them. In the beginning or even until after World War II, the control levers and pushbuttons for switches and signals were on miniature track diagrams within reach of the dispatcher. In the late 1950's, a new type of display was developed which placed the track diagram on free-standing wall panels and the dispatcher had a small push-button control panel. He could select a particular end-of-siding location and so control the switch and signals at that location. With this type of equipment, a much larger territory could be controlled because the physical dimensions of the track diagram could be fairly large. Also, the dispatcher could select any of the controlled points, which did not require him to physically reach each controlled location.

Some variations have been developed in which a very much reduced track diagram is mounted directly in front of the dispatcher, yet he retains the pushbutton control panel to select controlled locations and operate switches and signals at these locations.

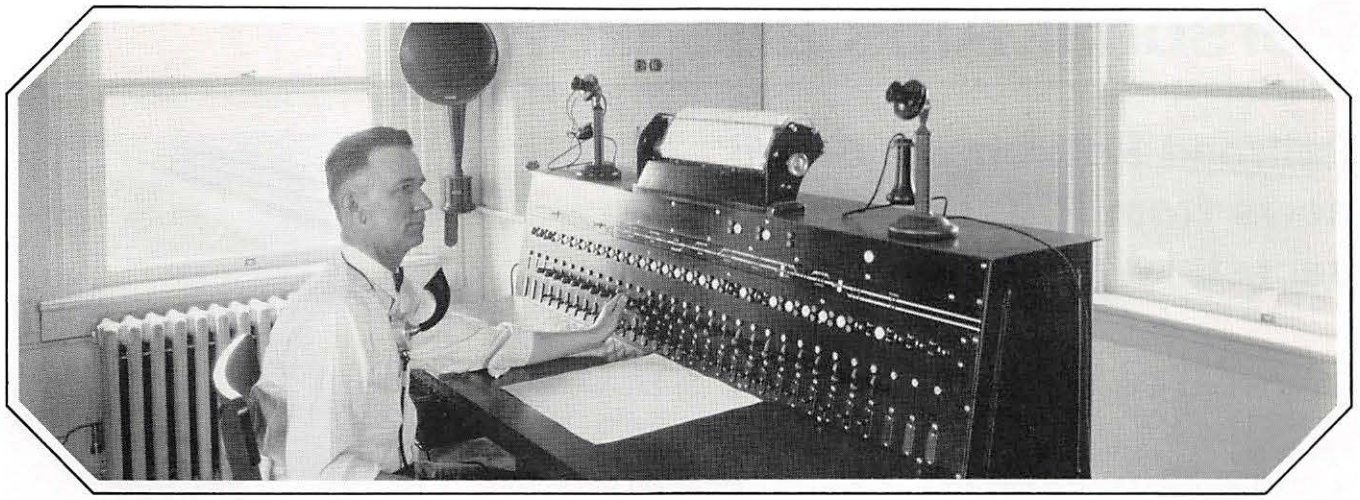
And the latest in control machine is the use of tv monitors to provide track diagram displays. Black and white sets were used initially but now color tv displays are being used. Burlington Northern (see front cover) has installed color-screen tv systems for ctc display at two locations, Alliance and Lincoln, NE. Large monitors shows track diagrams covering 100 miles or more of track, while a smaller unit displays a short portion of track. Southern has color tv monitors at its ctc control location in Greenville, SC. The tv's are controlled by a minicomputer system.

Obviously, computer controlled ctc with color tv monitors to provide display, and various types of reports generated by the computer has been a tremendous step forward since the first ctc was installed in 1927. That system, using direct wire controls, was invented by Sedgwick N. Wight of General Railway Signal Co. Wight received the Elmer A. Sperry Award in 1971 for his invention. It was described by the awards board as follows:

"Mr. Wight's concept of decentralizing the safety features while centralizing the control facilities ushered in a new era of safe and efficient train operation. His concept was put to practical use on July 14, 1927 on the Toledo and Ohio Central (now ConRail) between Stanley and Berwick, Ohio. The dispatcher at the control panel in Fostoria remotely controlled the switch operating mechanisms and signals along the 40 miles of railroad."

Certainly, ctc has grown considerably since that first installation. And it has been a credit to the manufacturers, the railroads, and certainly to the signalmen that such growth from 40 road-miles to over 60,000 road-miles in 50 years has been accomplished.

The continued growth, plus the ever increasing sophistication of ctc equipment is just another indication that railroads will continue to require skilled signalmen to install and maintain centralized traffic control.



Golden Anniversary of cTc

July 25 is the 50th anniversary of the first installation in the world of centralized traffic control (cTc). Sedgwick N. Wight of GRS invented cTc and, as these photos show, his first machine has been vastly improved over the years.

In 1971, Mr. Wight received the Elmer A. Sperry Award (in memoriam) for his invention, and here's how the awards board described his invention:

"Mr. Wight's concept of decentralizing the safety features while centralizing the control facilities ushered in a new era of safe and efficient train operation. His concept was put to practical use on July 25, 1927 on the Toledo and Ohio Central (now Penn Central) between Stanley and Berwick, Ohio. The dispatcher at the control panel in Fostoria remotely controlled the switch operating mechanisms and signals along the 40 miles of railroad."

With this head start, GRS has always been a world leader for the most efficient traffic control systems for all types of railroads. A prime example of this is today's modern, computer-controlled Traffic Master® II color video control system. Coupled with a GRS high-speed code transmission system, one operator at the system's automated, management-by-exception console can routinely control an entire railroad.

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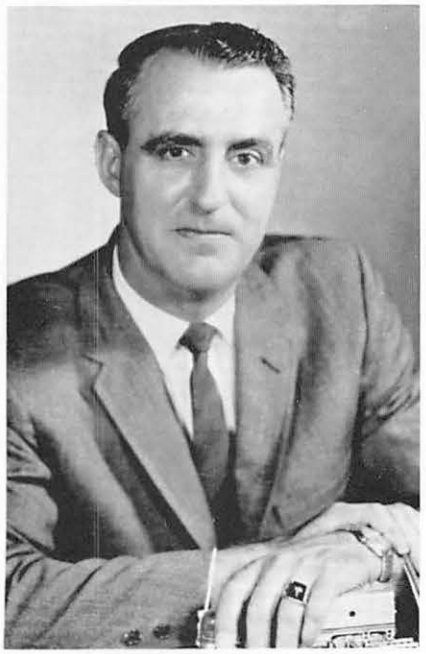
Personal Aids and News

Railroad Retirement Board news from R. T. Bates, secretary-treasurer, BofRS



The 18 to 22 year-old children of deceased railroad employees may receive survivor annuities under the Railroad Retirement Act if they are attending school on a full-time basis. Railroaders are thus assured that their children can receive some financial assistance to continue their education in the event of the employee's death.

The following questions are among those most frequently asked the U.S. Railroad Retirement Board about these student benefits.

(1) How much do students' annuities generally amount to?

At the end of June the average monthly benefit paid to a student by the U.S. Railroad Retirement Board was about $274.

(2) What is required for the student to be eligible?

He or she must be between 18 and 22 years old, unmarried, and attending school on a full-time basis. The deceased parent must have been insured for survivor benefits under the Railroad Retirement Act, which requires at least 10 years of railroad service and a "current connection" with the railroad industry. The current connection requirement is generally met if the parent was working in the railroad industry up to or shortly before death or retirement. If the parent did not meet these requirements, the Social Security Administration will have jurisdiction over such benefits.

Dependent grandchildren of employees may also qualify for annuities, if their parents are deceased or disabled.

(3) What is required for a child to qualify as a full-time student?

A student attending day or evening classes meets this requirement if the course of study lasts at least 13 weeks, and if the school considers him a full-time student according to their standards. In addition, if he or she attends a high school, vocational school, or any educational institution other than a junior college, college or university, the student's rate of attendance must be at least 20 hours a week.

(4) Are there any restrictions on the type of school a student may attend in order to qualify for an annuity?

Yes. He or she must attend a public school that is supported by the local, State, or Federal government; a private school that is approved by the State or is accredited by a recognized accrediting agency; or a non-accredited school from which credits are accepted on transfer by at least three accredited schools. Attendance at foreign secondary schools and many foreign colleges and universities is also acceptable.

(5) Will enrollment in correspondence courses qualify a child as a full-time student?

Generally not. Only under certain special circumstances which prevent actual classroom presence can correspondence courses be considered to establish full-time attendance. Anyone considering correspondence courses should check with the nearest Board office for details concerning his specific case.

(6) If a child is taking some job-related courses at a college at the request of his employer, can he receive an annuity if he is receiving his salary while at school?

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No. The fact that his employer pays him while he is attending school disqualifies him for an annuity. However, a student participating in a work-study program (in which he works at a job assigned to or obtained for him by the school as an integral part of his instruction) is considered to be in full-time attendance. Students who work part-time while attending school may also be considered full-time students.

(7) Will a student receive his annuity for the months that he is not in school?

He can receive his annuity during periods of four months or less (such as summer vacation) if he was attending school full-time before the period began and intends to return to school full-time within four months.

(8) Will a student's earnings affect his annuity?

The rules on earnings for students are the same as for other survivors. He may earn up to $3,000 in 1977 with no effect on his annuity. If he earns more, his annuity will be reduced at the rate of $1 for every $2 earned over $3,000; however, he will not lose benefits for any month in which he earns $250 or less. A student is not entitled to receive an annuity for any month in which he works in the railroad industry.

(9) When does a student's eligibility end?

Entitlement to an annuity ends when a student reaches age 22, marries, or stops attending school on a full-time basis. However, his benefits can be extended through the end of the quarter or semester in which the student attains age 22, if he is in full-time attendance in the month he attains age 22, and he has not yet completed the requirements for a bachelor's degree.

(10) Is a student obligated to notify the Board if he decides to stop attending school full-time or to marry?

Yes, he should notify the nearest district office of the Board immediately, in order to avoid a possible overpayment which may be difficult to repay. ANY CHECKS HE RECEIVES IN ERROR SHOULD BE RETURNED UNCASHED TO THE BOARD. It is also his responsibility to report his earnings to the Board if he expects to earn more than $3000 annually.

(11) Can the children of a retired employee qualify for benefits during the retiree's lifetime such as those provided for the children of a deceased employee?

Only in a small number of cases. Annuities are not directly payable to children while a retiree is living, even though such benefits are payable under the Social Security Act. In the great majority of cases, railroad retirement benefits to an employee and spouse exceed the amount that would be payable to the family under the Social Security Act. However, there is a special guaranty that includes benefits to qualified children as well as students to ensure that no family will receive less in railroad retirement benefits than they would have received under social security.

Extended benefits come from unemployment rate

The U.S. Railroad Retirement Board announced that because of an increase in the national insured unemployment rate, unemployed railroad workers with less than 10 years of railroad service can qualify for extended unemployment benefits beginning on September 2. Such employees may begin receiving extended unemployment benefits only during periods of high unemployment (the rate of insured unemployment must be 4.5 percent or higher) in either the national economy or the railroad industry. Once an extended benefit period is established for an employee with less than 10 years of service, it may continue for 13 weeks regardless of the rate of unemployment. Employees with 10 or more years of service may qualify for extended railroad unemployment benefits regardless of unemployment rates.

The previous period of high unemployment ended on July 22, 1977,

(Please turn to page 24)

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What is the life expectancy of a McGraw-Edison nickel-cadmium battery?

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How well do nickel-cadmium batteries stand up to cold weather?

Exceptionally well! Nickel-cadmium batteries are not subject to bursting from exposure to sub-zero temperatures, regardless of state of charge.

Tests prove that the nickel-cadmium battery delivers 65% of its capacity at -40°F, 85% at 0 degrees.

What about hot weather?

Nickel-cadmium cells can be exposed to an average temperature of 115°F without significant loss of expected service life.

Do nickel-cadmium batteries retain a charge for long periods?

Yes. The nickel-cadmium battery shows remarkably little self-discharge, even after standing idle for long periods of time. A charged or discharged nickel-cadmium battery can be stored indefinitely without permanent damage.

But do they gas on discharge?

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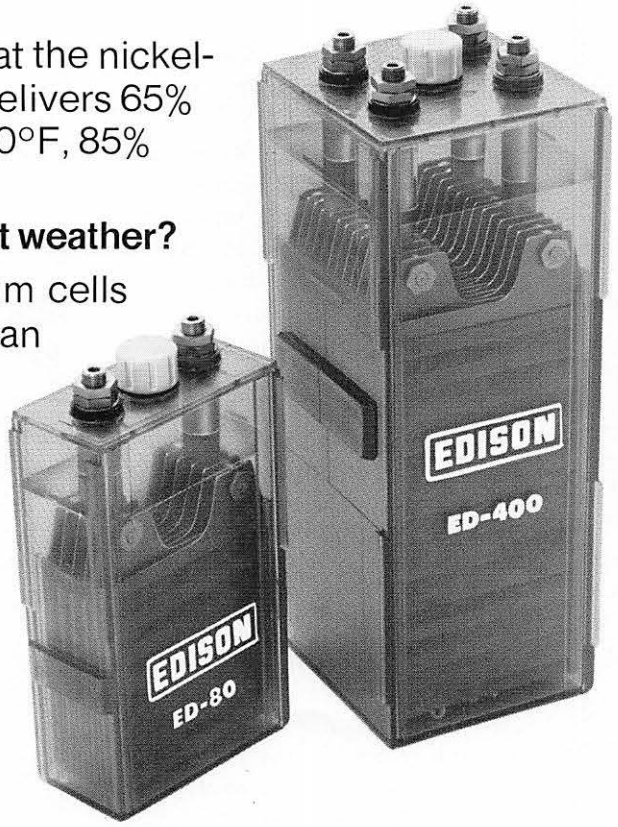

Are nickel-cadmium batteries harmed by shorting or reversing?

No. A nickel-cadmium cell exposed to a short circuit is not harmed internally. Nor will it lose capacity when reverse voltage is applied.

battery.

What about mechanical characteristics?

The unique patented Cliplock design eliminates battery trays. Which means fewer parts for you to purchase and stock. The cell's plastic case eliminates the possibility of grounds and electrolytic corrosion of the cell. The transparent plastic also means electrolyte levels can be visually checked. The lighter overall weight of cells means easier handling.

Do nickel-cadmium batteries have low IR drop?

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How do the batteries respond to severe mechanical shocks and vibrations?

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How much maintenance do nickel-cadmium batteries require?

Nickel-cadmium batteries do not require periodic equalizing charges. With proper charge regulation, they need water added as infrequently as once every few years.

Are they hard to clean?

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What about corrosive fumes?

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Congress should fully fund RR retirement

By the time you read this a joint House-Senate conference committee will have agreed upon final points in HR 7555 which contains provisions to fund the phase-out costs of dual benefits in the Railroad Retirement Account. Testimony supporting full funding was presented by C. J. Chamberlain, president, BofRS, and chairman, RLEA. His testimony is presented in the belief that a meaningful and informative presentation has been made that will help Signalmen to better understand the situation. Chamberlain's comments appear below:

The Railroad Retirement System is the basic and with some exceptions the exclusive pension program within the railroad industry for retirement benefits for railroad employees within the crafts and classes represented by railroad labor organizations. The Railroad Retirement Act of 1937, itself, was a response to the need for a pension system in the railroad industry, akin to pension plans which subsequently developed throughout American industries in the period of the 40's and 50's and unlike the old-age systems program contemplated by the Social Security Act. At the time of its enactment in 1935, the carriers and the labor organizations agreed that the Federal Railroad Retirement program would constitute the basic retirement system for railroad employees.

Today, the Railroad Retirement System constitutes one of the largest pension systems in the United States with more than one million beneficiaries, consisting of retired railroad employees, their wives, and their widows and with more than 500,000 participants actively employed by the railroads.

Our concern today in testifying before this Committee on behalf of the 21 railroad organizations representing these employees is with the financial stability of the Railroad Retirement System. Financial stability of the system is directly and immediately related to appropriations to the railroad retirement account to cover the costs of dual benefits pursuant to the terms of the Railroad Retirement Act of 1974. This Subcommittee has before it an item requested by the Railroad Retirement Board to appropriate funds for this purpose because Congress, in overhauling the Railroad Retirement Act in 1974, provided that the phase-out cost of excess dual benefits shall be paid from general funds. The Railroad Retirement Board was given the responsibility for calculating on a level basis the annual amount needed to finance these benefits.

Section 15(d) of the Railroad Retirement Act of 1974 establishes a continuing authorization throughout a 25-year period for appropriations in an amount necessary to pay the costs of these dual benefits.

In pursuance of the responsibility imposed upon it by this legislation, the Railroad Retirement Board has now determined that $356 million per year is required for each of the years before the end of the fiscal year 2000 to maintain this obligation.

The Board's recommendations to the Office of Management and Budget some months ago were based upon this determination. Yet, in total disregard of the fact that this is a mandatory item, OMB in its January Budget during the final days of the outgoing administration limited the Railroad Retirement request to $250 million and further, proposed a ceiling in this amount upon all future appropriations.

The legislative background involves the Railroad Retirement Act of 1937 and its restructuring in the form of the Railroad Retirement Act of 1974. The 1974 revision was based upon a prolonged study to identify the causes for weakness in the financial structure of the Railroad Retirement System.

It was at this point that dual benefits came into focus.The committees involved in the study recognized that the principal weakness in the Railroad Retirement financial system was the result of policies governing the financing of dual benefits. The system for financing dual benefits substantially drained the financial resources of the Railroad Retirement System and it was universally agreed that something had to be done about this drain if financial stability of the railroad pension was to be established.

In its simplest form for purposes of this explanation, the dual benefit may be described as a Social Security benefit which was paid directly by the Social Security Administration to a retired railroad employee who also received a Railroad Retirement benefit. We are describing a retired employee who has worked a sufficient number of years in the railroad industry and in non-railroad industries to qualify for a pension under the Railroad Retirement System and for old age and survivor benefits under the Social Security System. A dual beneficiary may have worked some 10 to 15 years in a non-railroad occupation to qualify for social security and may have spent an additional 10 to 15 years in the railroad industry to qualify for a railroad retirement pension.

The significance of the dual benefit and its impact on the Railroad Retirement System is based upon a mechanism called "financial interchange" under which the Railroad Retirement System was reinsured with the Social Security System.

Under financial interchange, the Railroad Retirement System pays to the Social Security System each year an amount equal to the employment taxes which would have been paid to Social Security by all of the railroad

employees and by all of the railroads as if the railroad service were covered by the Social Security Act (which it is not). The Social Security System, in turn, transfers to the Railroad Retirement System each year an amount equal to the total Social Security benefits which would have been paid to all retired railroad employees, their dependents and survivors as if all of the railroad service, since 1936, had been covered by the Social Security Act.

So long as the retired railroad employees had no non-railroad employment and, therefore no dual benefit, the interchange system worked well.

But this was not always the case.

Where the retired railroad employee was also entitled to a dual benefit — that is — where the retired railroad employee qualified for and was actually receiving a Social Security benefit on account of employment in non-railroad occupations prior to, during or after his railroad employment, the financial interchange system operated to drain the Railroad Retirement System. This drain resulted from inadequate coordination between the two systems, derived largely from the manner in which benefits were computed under the Social Security Act.

In the course of the study resulting in the 1974 legislation, it was determined that the lost reimbursement to the Railroad Retirement System arising out of this arrangement was then inexcess of $4 billion. It was further estimated that future losses to the System, which would arise out of this dual benefit drain, if untreated, would amount to an additional $4 1/2 billion.

The losses to the Railroad Retirement Fund from this source created a deficit of 7.72% of taxable payroll in 1974, amounting in round dollars, to more than $500 million each year. This factor standing alone posed a most serious threat to the solvency of the Railroad Retirement program. Elimination of this drain was essential both to restoring fiscal soundness of the basic railroad pension system and to establishing equitable retirement benefits for all railroad employees.

It was decided by the Congress on this basis to eliminate the dual benefit in excess of the amount which the employee would have been paid if his entire employment experience had been covered by Social Security. It was recognized by the Congress, however, that vested excess dual benefits of some 370,000 beneficiaries on the Social Security rolls as of January 1, 1975, as well as those excess benefits of railroad employees who were fully qualified under both systems as of that date but who had not yet retired must be maintained as an obligation of the Federal Government and for that reason it provided a schedule for phasing out these benefits.

The dual benefits thus preserved were frozen under the 1974 legislation. The Act provides that these frozen benefits shall be based upon service prior to January 1, 1975, and shall not be increased by virtue of any service thereafter.

In the restructuring of the Railroad Retirement System in 1974, Congress recognized that this single feature of the revised law was properly a federal responsibility and was to be supported by federal funding.

In other words, the Congress determined in 1974 that the costs of maintaining the vested interests of employees and beneficiaries in this limited manner during the dual benefit phase-out period should be paid out of the Federal Treasury. Thus, Section 15(d) of the Railroad Retirement Act of 1974 provides "There is hereby authorized to be appropriated to the Railroad Retirement Account for each fiscal year ending June 30, 1976, such sums as the Board determines to be necessary on a level basis to pay before the end of the fiscal year 2000 the total" costs of phasing out these frozen dual benefits. It is further provided in Section 15(d) that the Railroad Retirement Board "shall, at the time of each actuarial evaluation made prior to the fiscal year 2000 . . . re-evaluate the amount determined under the preceding sentence for the purpose of determining the amounts to be appropriated thereunder." Section 15(g) of the 1974 Act directs the inclusion of this actuarial re-evaluation in the Board's annual report in intervals of three years.

The first estimates of the windfall appropriations were made in 1974 and concluded that the gross appropriation on a level basis over a 25-year period amounted to $285 million. These estimates were reduced by an investment offset, (i.e., interest) of $35 million, thereby establishing

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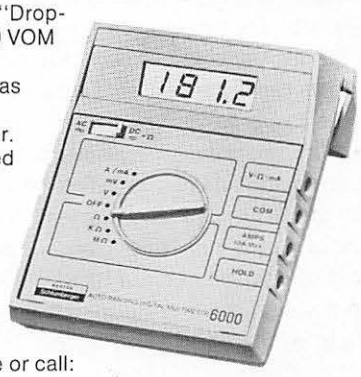

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the need for a net appropriation of $250 million.

The actual size of the appropriation on this item for fiscal year 1976 is $250 million. The Thirteenth Actuarial Valuation, however, has now reexamined the entire question and has concluded that the $250 million estimate was $100 million short of the actual amount needed for the financing of the dual benefit on a level basis during this phase-out period of 25 years.

The actuaries who prepared this report explained that the $250 million figure was based on "static assumptions after 1974"; that is, that most of the relevant facts would remain static, positing a stable non-inflationary economy. The current calculations are based on dynamic assumptions through 1980 geared to increases in the Consumer Price Index, assuming inflation through 1980, and this difference in approach produces a figure of $49 million in excess of the $250 million.

Investment offset of $35 million calculated in the 1974 estimate appeared much too high and was refigured by the actuaries to produce no more than $10 million of revenue. The difference accounts for another $25 million in the $100 million miscalculation.

Another $5 million results from a disagreement on the level of interest which can be expected from the debt. The present calculations are based upon a 3% rate whereas the 1974 calculations were based on a 5.75% rate.

These three items account for $79 million of the $100 million shortfall. The actuaries offered "no real explanation for the other $21 million although higher retirement rate assumptions are certainly a factor."

The revised amount thus estimated by the actuaries for the appropriation to cover this item comes to $350 million per year over the 25-year period beginning January 1, 1975, or $356 million for each of the remaining years of that period.

Despite the Board's request for full funding, OMB in its January Budget which remains unchanged as of this date, requested a limited appropriation of only $250 million for this item and proposed to impose a corresponding ceiling on future appropriations through legislation. Its recommendation in this respect would simply turn the clock back to the period of the early 70's in which the financial integrity of the Railroad Retirement System was jeopadized by the dual benefit problems. The proposal to legislate a limiting ceiling in this manner would have the effect of once again imposing upon the Railroad Retirement System a substantial financial drain resulting from impositions of the dual benefit obligation even in its modified frozen form. This drain assumes even greater significance when viewed in the light of the conclusion by the actuaries in their most recent evaluation that there is an actuarial deficiency of 4.1% of taxable payroll or $300 million in the Railroad Retirement System and that unless something is done to repair this deficiency, the Railroad Retirement Fund will be exhausted and incapable of meeting its obligations in 1986.

The imposition of an additional $106 million to this already threatening deficit will simply erode the system and complicate the problems now being faced in the administration of the program.

It should be remembered that the OMB opposed the 1974 legislation on precisely the same ground upon which OMB in its January Budget trimmed the Railroad Retirement Board request and President Ford's veto of the Railroad Retirement Act in 1974 followed suit.

You will recall that the sentiment of the Congress at that time with respect to the veto was expressed in an override vote of 72 to 1 in the Senate and 360 to 12 in the House.

We have now discussed the OMB position in some depth with the new OMB Director Bert Lance. We submitted materials to him on the history of the subject and explored in a general way the position taken by his predecessor earlier this year. His response was that it was too late in the budget year to reexamine the earlier position and that for that reaon he would not disturb the $250 million substandard figure specified in the January Budget request. Nonetheless, as we understand his position, he has committed OMB to support full funding at the mandatory statutory level of $356 million, possibly adjusted further to reflect the statutory spread to the year 2000, "if no changes are warranted" upon the completion of the OMB review.

While we welcome this commitment to the level of funding mandated by the Congress, we fail to see any rational basis for underfinancing in this fiscal year in contradiction to the express provisions of the statute. If inertia is the basis for this position, we feel that it hardly justifies disowning a mandatory government obligation. The dual beneficiaries have an entitlement by act of Congress to full payment of their Railroad Retirement pensions and Social Security benefits and the proposed disavowal of the mandatory obligations would jeopardize their legal rights in this respect. It is not an answer to simply say "let the Railroad Retirement Board pay this government obligation out of its Fund and if there are no changes, we will make it up later." Not only does this proposal overlook the mandatory character of the obligation and the direction of the Congress in the 1974 Act, it arbitrarily places a burden on the Railroad Retirement Fund, already burdened by a 4.1% deficit according to the Thirteenth Actuarial Report.

While we in no way quarrel with Director Lance's decision to review the dual benefit item in the Actuaries' Report, we do quarrel with the OMB's recommendation that the dual benefit deficiency for the fiscal year 1978 should be paid with funds derived from Railroad Retirement employment taxes contributed by the carriers and the railroad employees whom we represent.

It is just as essential today as it was in 1974 that the full appropriation of $356 million for the payment of the remaining dual benefits, as prescribed by the actuaries and as requested by the Railroad Retirement Board, should be approved as a mandatory item.

Amtrak passes must be renewed

The following letter and list of railroad officials for contacting about Amtrak passes has been received from A. R. Lowry, assistant vice president and director labor relations, National Railroad Passenger Corp.

"This year approximately 127,000 Rail Travel Privilege Cards of retirees and widows will expire. All are required to file renewal applications with their railroad or terminal company to obtain new cards. Many do not know they must reapply through their home railroad or terminal company, even though we send them "reminder to renew" notices. Therefore, to minimize delays associated with this renewal program, we are extending passes of retirees and widows for 90 days beyond the expiration date shown on their Rail Travel Privilege Cards. This extension will become effective on June 1, 1977, and until further notice.

"The attached list shows the names, titles and addresses of railroad and terminal company officials who handle such matters in behalf of retirees, and widows of employees and retirees, eligible for rail travel privileges under Amtrak's Terms and Conditions for the Issuance of Free and Reduced-Rate Transportation Pursuant to Public Law 92-316. In the future, if you receive inquiries from retirees and widows concerning pass privileges on Amtrak, I would appreciate your advising them to contact their home railroad or terminal company for assistance."

W. E. Riney
Superintendent
Akron and Barberton Railroad
P. O. Box 712
Barberton, OH 44203

C. L. Morris
Assistant to President
Fort Worth and Denver Railway
P. O. Box 943
Ft. Worth, TX 76101

P. H. Pfeiffer
Manager of Employment
Soo Line Railroad
Box 530
Minneapolis, MN 55440

J. J. Newbauer, Jr.
Assistant to President
Richmond, Fredericksburg & Potomac
2100 Westwood Ave.
Richmond, VA 23220

W. T. Harral
Superintendent
San Diego & Arizona Eastern
45 12th Ave.
San Diego, CA 92101

D.K. McNear
President
Central California Traction
One Market St.
San Francisco, CA 94105

Harold T. Filskov
Vice Pres.- Gen. Mgr.
Vermont Railway Company
Burlington, VT 05401

Herman Lazarus
President
Maryland & Pennsylvania
490 East Market St.
York, PA 17403

Richard Shaw
Vice President
Detroit & Mackinac Railway
120 Oak St.
Tawas City, MI 48763

S. J. Barry
Director of Passenger Services
NRPC Operations Officer
Chicago, Milwaukee, St. Paul & Pacific
204 South Canal St.
Chicago, IL 60606

Robert G. D'Andrea
Manager — Pass Bureau
Burlington Northern, Inc.
176 East Fifth St.
St. Paul, MN 55101

Linda A. Peacher
Secretary to President
Detroit, Toledo & Ironton
One Parkland Blvd.
Dearborn, MI 48126

M. W. Franke
Vice President — General Manager
High-Point, Thomasville & Denton
P. O. Box 205
Winston-Salem, NC 27102

M. C. Kirby
President
Manufactures Junction Railway
2335 South Cicero Ave.
Cicero, IL 60650

S. I. Poertner
Director — Employee Benefits
St. Louis – San Francisco
3253 East Trafficway
Springfield, MO 65802

H. D. Huffman
Vice President — General Manager
Alton & Southern Railway
1000 South 22nd St.
East St. Louis, IL 62202

W. S. Byrne
President
Lake Superior Terminal & Transfer Company
933 Oakes Ave.
Superior, WI 54880

W. A. Gall
Supervisor — Personnel Services
Southern Pacific Transportation Co.
Northwestern Pacific
St. Louis Southwestern
One Market St.
San Francisco, CA 94105

John Nestala
Office Manager
Chicago Union Station
210 South Canal St.
Chicago, IL 60605

J. N. Kiefer, Jr.
Vice President — General Manager
Genesee and Wyoming Railroad
3846 Retsof Rd.
Retsof, NY 14539

M. W. Franke
Vice President — General Manager
Winston-Salem Southbound Railway
P. O. Box 205
Winston-Salem, NC 27102

John Buffalo
President
Terminal Railroad Association of St. Louis
906 Olive St.
St. Louis, MO 63101

Jim Johnson
Director of Personnel
Houston Belt & Terminal Railway
Union Station Building
Houston, TX 77002

K. I. Fadden
Labor Relations Assistant
Central Vermont Railway
General Offices
St. Albans, VT 05478

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Treasurer
Brooklyn Eastern District Terminal Railroad
86 Kent Ave.
Brooklyn, NY 11211

F. R. Macik
Treasurer and Director of Personnel
Galveston Wharves
802 Rosenberg
P. O. Box 328
Galveston, TX 77553

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Manager — Pass Bureau
Kansas City Terminal
General Office — Room 204
Union Station
Kansas City, MO 64108

James A. Lee
Pass Bureau
Pittsburgh & Lake Erie Railroad
P&LE Terminal Building — Room 306
Pittsburgh, PA 15219

M. T. Staub
Vice President Operations & Maintenance
New York, Susquehanna & Western
Tri Terminal Building
309 River Rd.
Edgewater, NJ 07020

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President & General Manager
Kentucky & Indiana Terminal
2910 North Western Parkway
Louisville, KY 40212

Walter Rich
President & General Manager
Cooperstown & Charlotte Valley
1 Railroad Avenue
Cooperstown, NY 13326

M. H. Soehren
General Manager
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P. O. Box 486
Charles City, IA 50616

Guido Cottini
Vice President
McCloud River Railroad
P. O. Drawer A
McCloud, CA 96057

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St. Joseph, MO 64501

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Hammond, IN 46323

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300 West Memorial Ave.
Houghton, MI 49931

O. B. Drummond
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Norfolk and Portsmouth Belt RR
220 Law Building
Norfolk, VA 23510

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General Manager
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Pouch 7-2111
Anchorage, AK 99510

Lucille Kurow
Secretary to President
Belt Railway Company of Chicago
6900 South Central Ave.
Chicago, IL 60638

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111 West Fulton St.
Gloversville, NY 12078

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Manager - Pass Bureau
Illinois Central Gulf Railroad
Two Illinois Center
233 North Michigan Ave.
Chicago, IL 60601

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Detroit & Toledo Shoreline Railroad
131 West Lafayette Ave.
Detroit, MI 48226

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Secretary - Treasurer & Superintendent
El Paso Union Passenger Depot
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El Paso, TX 79901

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Superintendent
Chicago Produce Terminal Company
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Chicago, IL 60608

Pat Thomas
Pass Clerk
Grand Trunk Western Railroad
131 West Lafayette Blvd.
Detroit, MI 48226

Howard H. Olmsted
General Manager — NRPC Ops.
Missouri Pacific
Arkansas & Memphis Railway Bridge and Terminal
Brownsville & Matamoros Bridge
Chicago & Eastern Illinois
Chicago Heights Terminal Transfer
Doniphan, Kensett & Searcy Rwy.
Fort Worth Belt Railway
Missouri-Illinois Railroad
New Orleans and Lower Coast RR
Texas-New Mexico Railway
Texas & Pacific Railway
Texas Pacific – Missouri Pacific Terminal RR of New Orleans
Union Terminal Railway
210 North 13th St.
St. Louis, MO 63103

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Colorado & Southern Railway
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C&O/B&O Railroads
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Baltimore, Ohio & Chicago Terminal
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Chesapeake Western
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80 East Jackson Blvd.
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Veto Pacetti
Superintendent
Union Belt of Detroit
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Secretary-Treasurer
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President & Chief Executive Officer
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Becky Macumber
Executive Assistant to President
Pass Bureau
Delaware and Hudson Railway
Albany, NY 12207

D. Nielsen
NRPC Specialist
Union Pacific Railroad Company
Ogden Union Railway and Depot Company
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Omaha, NE 68102

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Manager — Pass Bureau
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Boston Terminal
Central Railroad of New Jersey
Chicago River & Indiana
Dayton Union Railway
Erie Lackawanna Railway
Indianapolis Union
Lehigh & Hudson River
Lehigh Valley Railroad
New York & Long Branch
Pennsylvania — Reading Seashore Line
Reading Railroad
Union Terminal — Columbus
30th Street Station Room 262
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and Pass Bureau
Boston & Maine Corporation
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Union Station
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Amtrak Certification Clerk
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Stearns, KY 42627

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Bruce Henderson
Chief Clerk
Colorado & Wyoming Railway
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Joliet, IL 60435

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Manager
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Yakima, WA 98902

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Assistant to President & Treasurer
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Hampton, SC 29924

J. Ruel Coleman
Vice President & General Mgr.
Louisiana and North West
P. O. Box 535
Flushing, NY 11352

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Manager
Akron, Canton & Youngstown
General Offices
Akron, OH 44308

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President
Spokane International Railroad
1416 Dodge St.
Omaha, NE 68179

Wesley J. Granger
Superintendent
East St. Louis Junction
National Stockyards, IL 62071

R. G. Johnston
Manager — Pass Bureau
Duluth, Missabe and Iron Range Railway Co.
Proctor, MN 55810

R. L. Pfister
Superintendent
Los Angeles Union Passenger Terminal
800 North Alameda St.
Los Angeles, CA 90012

M. R. Seipler
General Manager
Elgin, Joliet and Eastern
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Joliet, IL 60434

J. E. Moerke
Director — Labor Relations
Bessemer & Lake Erie RR
Greenville, PA 16125

C. J. Foulds
Personnel Manager
Union Railroad Co.
East Pittsburgh, PA 15112

G. S. Gray
Manager
Cincinnati Union Terminal
P. O. Box 44176
Cincinnati, OH 45244

J. L. Smith
Superintendent
Wichita Union Terminal
1537 Barwise
Wichita, KS 67214

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President
Northampton and Bath Railroad
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Pittsburgh, PA 15230

W. E. Copeland
Manager — Labor Relations & Personnel
Birmingham Southern Railroad
General Offices — Parker Building
P. O. Box 579
Fairfield, AL 35064

R. D. Bunton
Manager — Passenger Traffic
Chicago South Shore & South Bend
General Office
Michigan City, IN 46360

S. Shumate
President
Richmond Terminal Company
Broad Street Station — Room 200
Richmond, VA 23020

W. O. Tracey, Jr.
General Manager — Treasurer
Des Moines Union Railway
Hubbell Building — Suite 203
Des Moines, IA 50309

W. A. Fitzgerald, Jr.
Terminal Manager
New Orleans Union Passenger Terminal
1001 Loyola Ave.
New Orleans, LA 70113

PA&N Cont'd.

because both railroad and national insured unemployment rates dropped below 4.5%. Since the rate can change from week to week, those who may be newly eligible for extended benefits should not delay in applying, and those who were previously ineligible due to the ending of a period of high unemployment, and are still unemployed, should reapply promptly.

Consumer catalog is now available

DID YOU KNOW THAT —

—By law women can now keep their own charge accounts and credit histories when they marry. And they can also establish their own credit histories when they share an account with their husbands. **(Equal Credit Opportunity Act,** 598E, Free)

—Although Americans spend an estimated $700 million a year on nonprescription cold remedies, not a single one of these products will prevent, cure or even shorten the course of a common cold. They can only relieve some of the symptoms. **(Common Cold,** 642E, Free)

—New joggers sometimes find it difficult to know how hard to push themselves. You should be able to carry on a conversation while jogging. If you can't, you are working harder than your muscles can adapt to the exercise. **(Successful Jogging,** 641E, Free)

—If you receive by mail merchandise you did not order, federal laws say you can consider it a gift and keep it without paying for it. **(Shopping by Mail? You're Protected,** 627E, Free)

—You can get a *Catalog* from the Consumer Information Center of the General Services Administration that lists more than 200 federal publications having all this information and much more. It is called **The Consumer Information Catalog,** and it is available free by sending a postcard to the Consumer Information Center, Pueblo, CO 81009.

Here are some more little known facts from booklets listed in the Fall edition of the Catalog:

To help prevent false alarms from your home security system, plug it into a separate circuit from kitchen appliances and your heating and cooling system. The cyclic operation of these appliances may trigger the alarm. **(Home Security Alarms,** 676E, Free)

Amtrak announces pass policy changes

Amtrak has announced several changes to Pass Policy that will have a direct bearing on use of and duration of Rail Travel Privilege Cards issued to employees and retirees.

Effective September 5, 1977, Spouses of employees will be permitted to use the passes of employees and retirees to obtain transportation privileges for themselves and all other eligible dependents listed on the "Notice of Privileges" label, including the person named on the face of RTPC. Spouses will be required to write their signature on the "Notice of Privileges" label. When the spouse is obtaining tickets, the ticket clerk will require the individual to sign the tickets, and in so doing will compare the signature to the one on the "Notice of Privileges" label to satisfy identification requirements.

RTPCs (blue card) issued to retirees and widows are currently valid for two years. In the future, passes will be renewed for three year periods instead of two years.

Amtrak intends to revise its "Conditions of Use" card which is sent along with each new RTPC to include notice that it is a violation of Federal law to abuse or permit others to abuse pass privileges. It is considered an Act of Larceny under U.S. Federal Statute Title 18, Section 660.

Amtrak also wants to remind pass travelers riding in unreserved or reserved coach that they are required to yield their seats to full revenue passengers if standee conditions arise.

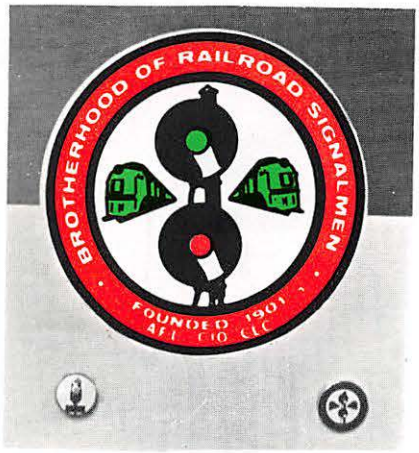
Cloth emblem is available with BofRS in white letters on red border, two locomotives and green over red searchlight signal.

Coasters (3" dia.) come in black and gold, or in white, red and green with BofRS emblem.

Playing Cards with the BofRS emblem are now available. These high-quality cards come in the conventional bridge decks, including jokers. Cards and emblem are in color.

Golf caps with the BofRS emblem in color are available in Small, Medium or Large with adjustable head band. These lightweight, net caps come in Red, Black or White.

The 8-volume signalman's training course covers the following subjects: 1—electricity, circuit symbols and nomenclature; 2—signal terms, relays, track circuits and meters; 3—automatic block signaling, time code control and electronics; 4—traffic control systems and power switch machines; 5—highway grade crossing warning systems and FRA RS&I tests; 6—remote control and automatic interlockings; 7—ctc machines and their operation; 8—maintenance of signal equipment.



Signalmen's decal (top) has adhesive backing so it can be applied to glass, leather, metal, etc. for BofRS identification on car windows, bumpers, luggage, hard hats, etc. The emblem is 4" or 3" in dia. It has a red border with white letters. The signal displays green over red. Below left is a metal **colorlight signal lapel pin** ½" in diameter with signal showing green over yellow over red on white enamel background. Signal and pin otulined in gold. Below right is ⅝" **BofRS lapel pin** identical to decal except letters and outline are in gold.

Red nylon windbreakers with elastic sleeve ends that fit tight to the wrists and with a drawstring at the bottom to pull tight to the waist come in three sizes: small (36-38); medium (40-42) and large (44-46). Two slash pockets and a cloth BofRS patch on the left front complete these men's jackets. The windbreaker is machine or hand washable in warm water.

A history of the Brotherhood of Railroad Signalmen has been written by the late A. E. Lyon, president emeritus, which covers the 75 years of the Brotherhood since its founding in 1901.

Master National Agreement Book has the basic provisions of national agreements negotiated with U.S. railroads and the BofRS. They are contained in a loose-leaf binder with 2-inch rings so there is room for additional material, such as local agreements. The 23 sections are: A—summary of wage changes; B—summary of other benefits; C—Washington job protection agreement of 1936; D—vacations; E—Union shop agreement; F—Holidays; G—Claim and grievance handling; H—Health and welfare; I—Force reductions; J—Employment security; K—Travel time and away-from-home expenses; L—Off-track vehicle accidents; M—Jury duty; Mc—Current agreement; N—Overtime; O—Camp cars; P—Apprentice programs; Q—Change of residence; R—Earnings deduction in discipline cases; S — Supplemental sickness benefits; T—Union dues checkoff; and U—Amtrak C-1, C-2; V—Seniority modification agreement.

The SIGNALMAN'S Store

PLEASE SEND ME THE FOLLOWING ITEMS:

_____Golf caps @ $4.50 each. ____R ____B ____W

_____Small _____Med. _____Large

_____Coaster (black and gold) @ 20¢ each.

_____Coaster (red and green) @ 25¢ each.

_____Cloth emblem @ $1.50 each.

_____Colorlight signal lapel pin @ $1.50 each.

_____BofRS red, gold lapel pin @ $2.00 each.

_____Decals @ 15¢ each. _____3 inch _____4 inch

_____Windbreakers—Red (nylon) @ $12.00 _____Small _____Medium _____Large

_____Decks of Playing Cards @ $3.00 each.

_____General Chairman & Local Chairman's Manual @ $3.00 each.

_____History of BofRS @ $9.95 each.

_____Signalman's training books @ $18.00 per 8-volume set.

_____Vol. 1 @ $2.50 each. _____Vol. 5 @ $2.50 each.

_____Vol. 2 @ $2.50 each. _____Vol. 6 @ $2.50 each.

_____Vol. 3 @ $2.50 each. _____Vol. 7 @ $2.50 each.

_____Vol. 4 @ $2.50 each. _____Vol. 8 @ $2.50 each.

_____Master National Agreement Book @ $7.95 each.

Minimum order accepted is $5.00. Please make check or money order payable to the **Brotherhood of Railroad Signalmen.** Send payment and order to BofRS at **601 W. Golf Road, Mt. Prospect, Ill. 60056.**

Amount enclosed $_____

Name_____Local No._____

Address _____

City_____State (Province)_____Zip_____

News About Members

Tracy Land adjusts rail wheels on Harlan Haines hi-rail, truck.

Harland D. Haines, signal maintainer at Grandview, MO for the Kansas City Southern, had an attractive 19-year old signal helper this past summer. Tracy Land, a Kansas University co-ed, worked with Haines as part of her 90-day internship as a trainee in the signal department. "She's not afraid of work, she's willing to learn and quite capable," said Haines, who is local chairman of Lodge 185. Miss Land said: "It's fun, you're out of doors and the pay is good. I hope to do it again next year." Miss Land was one of 15 college girls hired by KCS to work in signal maintenance for the summer.

Our thanks to the *Jackson County Advocate* for the pictures and information.

KU co-ed helps KCS maintainer

Ladder climbing is also a necessary accomplishment in signal work.

Checking battery voltages is a vital function is signal maintenance. Here Miss Land does the meter reading while Haines puts probes on battery terminals.

People in the News

CHESSIE SYSTEM: **Jerry W. Fair,** assistant supervisor signals and communications at Akron, OH, appointed system s&c inspector at Cincinnati, OH. **Allen R. Alfors,** assistant supervisor s&c at Huntington, WV, appointed system s&c inspector there. **Michael C. Guthrie,** signal foreman at Huntington appointed assistant supervisor s&c at JN Cabin, KY. **Estel L. Ratclif,** system signal inspector, appointed program engineer s&c at Cincinnati. **Earl F. Shaffer, Jr.,** assistant supervisor s&c, Newark, OH, appointed system s&c inspector at Cincinnati. **Melvin L. Mease, Jr.,** assistant supervisor work equipment, appointed assistant supervisor s&c at Cumberland, MD. **Jerry B. Dowdy,** program engineer s&c at Cincinnati, appointed engineer s&c at Huntington.

NORFOLK & WESTERN: **Otis Sowder,** assistant supervisor signals and communications, Radford, VA, appointed supervisor s&c at Roanoke, VA succeeding **J. W. Dutton,** retired. **Lynn N. Alderman,** assistant supervisor s&c, Altavista, VA transferred to Roanoke. **C. D. Williamson** appointed material specialist s&c and miscellaneous material management, Roanoke. **Michael H. Stockamp,** assistant engineer s&c at St. Louis, MO, appointed assistant circuit engineer at Roanoke. **Cecil A. Taylor,** management trainee engineering, appointed supervisor of accounts s&c at Roanoke.

ROCK ISLAND: **Charles P. Fischback,** executive assistant labor relations, appointed director of labor relations. Prior to joining RI, Fischback had practiced labor law in New York and was involved in labor relations matters with the New York City Transit Authority. He holds a law degree from the University of Wisconsin and a master's degree from Rutgers University in political science and labor relations.

ST. LOUIS-SAN FRANCISCO: **Glen R. Gargus** appointed communications & signals supervisor at Springfield, MO.

SANTA FE: **K. B. Elliott,** signal supervisor at Temple, TX, has retired.

SOUTHERN: **Edgar C. Logan, Sr.,** communication & signal supervisor at Valdosta, GA, has retired. **Ray F. Deal,** c&s production and material control engineer, appointed superintendent c&s yards at Atlanta, GA. **Arthur T. Hanak,** application engineer c&s Atlanta, appointed production and material control engineer c&s. **R. O'Dell Daniels,** signal maintainer, appointed supervisor c&s at Millen, GA. **Joel R. Godsey,** signal foreman, appointed project engineer c&s at Somerset, KY. **Lawrence D. Richardson,** application engineer c&s at Atlanta. **E. Jerry Talley,** signal maintainer, appointed supervisor c&s at Valdosta, GA.

NORFOLK & WESTERN: **Stanley A. Atkins,** signal maintainer at Monessen, PA, promoted to supervisor signals & communications with headquarters at Rook, PA.

UNION PACIFIC: **W. G. Gunn** appointed supervisor signalmen training at Cheyenne, WY.

THE OKONITE COMPANY: **Paul S. Lefler,** manager crossing warning systems, Western-Cullen, appointed manager southwestern railroad sales at Kansas City, MO.

SERVO CORP. OF AMERICA: **Howard R. Thorp,** director marketing and sales, Collins Radio Co., appointed vice president transportation division.

Howard R. Thorpe
Servo Corp.

W. Robert Fisher
Union Switch

John E. Hansen
Union Switch

Austin Johnson
Union Switch

Allen F. O'Rourke
Union Switch

Charles F. Wert
Union Switch

UNION SWITCH & SIGNAL DIVISION, WABCO: **Charles F. Wert,** vice president marketing, appointed vice president systems marketing and engineering. **W. Robert Fisher,** eastern sales manager, appointed general sales manager. **Allen F. O'Rourke,** western sales manager, appointed eastern sales manager. **Austin Johnson,** account manager, St. Louis, MO, appointed western sales manager. **John W. Hansen,** manager marketing communications, appointed manager headquarters sales. **William Bieksza** appointed manager marketing communications. All men will be located at division headquarters in Swissvale, Pittsburgh, PA.

NEWS from CANADA

CP Rail buys TH&B railway

CP Ltd. has taken over complete control of the Toronto, Hamilton and Buffalo Railway, which employs about 20 BofRS members. TH&B, which operates 250 miles of track in southern Ontario, had been owned jointly by CP, Penn Central, Michigan Central and the Canadian Southern Railway. CP bought out its partners for $6.5 million.

Will VIA honour CN and CP passes?

It is not yet known whether VIA Rail Canada will honour CN or CP employee passes on passenger services it is taking over from the two major railways.

VIA President Frank Roberts has advised that it will be up to each railway "to decide on which VIA trains they wish their passes to be honoured since there will be a charge made by VIA to the railway involved."

CP Rail begins double-track project

A $45 million track improvement project is underway in western Canada on CP Rail's mainline between Calgary and Vancouver. The first phase calls for construction of:

—4.5 miles of track between Revelstoke and Clanwilliam, BC.

—11 miles of track between Tappen to Notch Hill, BC.

—6 to 9 miles of track from Lake Louise, Alta. to Stephen, BC.

The second phase of the double tracking would involve construction of about 19 miles of new trackage in the Beaver Valley east of Rogers Pass, which may include a new 8-mile tunnel under the existing 5-mile Connaught Tunnel. When completed, the double-tracking will provide a reduced grade for westbound trains, leaving the original trackage for eastbound trains. The project is expected to be completed by 1980.

Canada to upgrade branch lines

The Canadian government expects to spend $100 million over the next two years to improve railway branch lines used for grain gathering in the three Prairie provinces, a transport department official said.

Track belonging to both Canadian National and Canadian Pacific will be improved. Work is expected to begin shortly.

The improvements were among recommendations for rehabilitation work valued at $450 million contained in a report on western grain handling submitted to the government last May by Judge Emmett Hall, the official said. He added it is too early to say if further spending will be approved.

John E. Platt, BofRS Vice president, was an advisor to the Canadian delegation at the International Labour Organization meeting in Geneva, Switzerland in June. Shown here are Platt (far right), John Harker (center) director, international affairs, Canadian Labour Congress, and Joe Morris (left), president CLC and a worker delegate to the ILO meeting.

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Lodge No. _____ **Certificate No.** _____

Several members of Ste. Charles Local 187 were awarded 25 or 30-year service pins by BofRS Vice President John E. Platt in his Montreal office. Shown here (left to right) are: R. Leate, A. Germain, V. Bevilaqua, E. LaJeunesse and J. McCormick (standing). Platt is seated at his desk. M. Barsalo and P. R. Pinnsonneault were not present at this ceremony, but did receive 25-year service pins. The pins are awarded to honor the member for 25 or 30 years of continuous membership payments.

Ed LaJeunesse (left) receives his 30-year membership pin from Vice President Platt.

Local Chairman John McCormick (left) receives his 30-year membership pin from Vice President Platt.

Burman Lodge 165 members are identified

Our thanks to John Kutz, recording and financial secretary for providing identifications for all members of Burlman Lodge 165 who were photographd at the Toronto regional meeting. Numbers refer to diagram with photograph that appeared on page 26 of the July-August 1977 issue of The Signalman's Journal.

(1) John Kutz; (2) Douglas M. LeTourneau; (3) John M. Prince, (4) Angelo Persia; (5) W. W. Schaefer, local chairman; (6) Brian J. King; (7) Gunther K. Sauerbaum; (8) Norman L. Allen; (9) Stanley C. Dembinski; (10) Lloyd R. Firth; (11) James K. Coughlin; (12) R. W. Laney; (13) John D. Smith; (14) C. J. Chamberlain, president, BofRS; (15) D. Majury, local chairman; (16) Kenneth M. Brooks; (17) Floyd E. Cable; (18) Ian P. Fogarty; (19) Richard A. Dixon; (20) Luis G. Joaquim; (21) Richard Truman; (22) John Benedetti; (23) Franco Rovazzi; (24) William Musika; and (25) Lloyd A. Shular.

CN signal maintainer wins $625 award

Dennis Hutton, signal maintainer of Brockville, Ont., and a member of Central Lodge 124, has been awarded $625 from the Canadian National Suggestion Plan for his suggestion that signal maintainers on the Great Lakes Region use pocket radios to monitor train dispatchers' radios.

"Sometimes finding a phone can take quite a while," Dennis said. "With a radio monitor, we can get the information immediately wherever we happen to be."

Use of the pocket radios means that maintainers get to the trouble spots more quickly. Also, the new system is cheaper than using the type of pocket beeper which simply signals the need to phone in for a message.

A. Germain (left) local president of Lodge 187 receives his 25-year pin from Platt.

R. Leate (left) receives his 25-year membership pin from John Platt.

V. Bevilaqua (left) receives his 25-year pin from Vice President Platt.

Signalman's Worksheet

Block Signaling Adjuncts

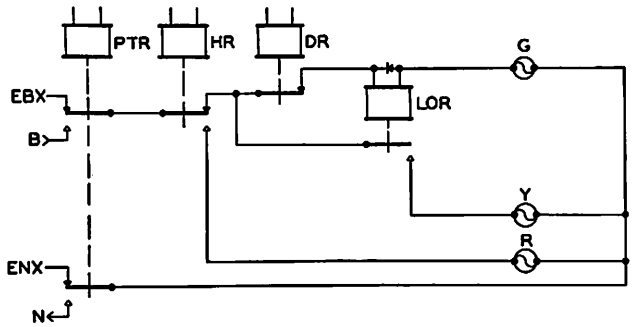
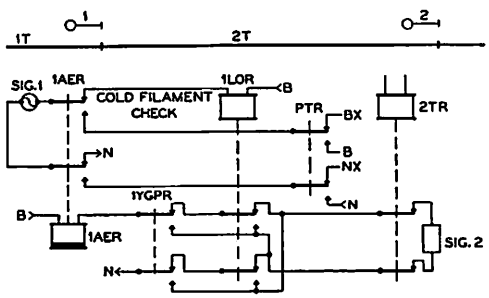
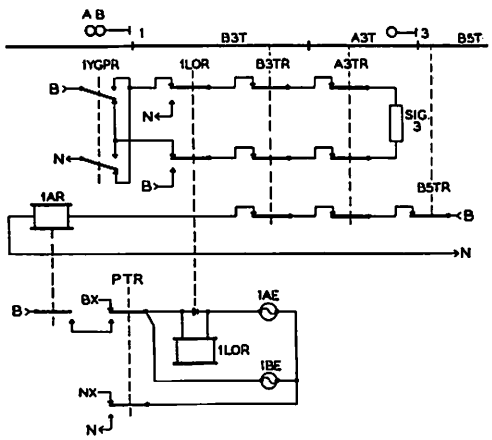


Fig. 507-Typical circuit for light-out detection with colorlight signals. Burned out green filament causes yellow lamp to light. Hot filament check.



a. A burned out filament in signal 1 causes signal 2 to display YELLOW. Cold filament check.



b. A burned out filament in the top unit of home signal 1 causes approach signal 3 to display yellow. Hot filament check.

Fig. 508-Typical circuits for light-out detection with searchlight signals.

LIGHT-OUT PROTECTION

Light-out relays provide a means of avoiding unnecessary stops by displaying a secondary indication should a signal lamp burn out. This secondary indication may be provided by the regular light unit next more restrictive to the one whose lamp is burned out, as shown in Figure 507, or by an auxiliary light unit.

Hot Filament Check, Color-Light Signal

In Figure 507, EBX is normally fed through a front contact of PTR, front contacts of signal control relays HR and DR, the rectifier and coils of light-out relay LOR, to the green (G) signal lamp, returning to ENX via another front contact on PTR.

Obviously, the light-out relay must be capable of operation on either a.c. or d.c. The rectifier inserted in multiple with the windings of LOR passes a.c. in one direction only. The a.c. will, on one half of the sine wave, be blocked by the rectifier and will flow through the windings of LOR, thus energizing the relay. During the other half of the sine wave, however, current will pass through the rectifier. In case of transfer to battery operation, d.c. is blocked by the rectifier and flows through the windings of LOR. When the green (G) lamp burns out, energy to LOR is cut off entirely and it will drop, closing its back contact to transfer energy to the yellow (Y) lamp, the next most restrictive indication. The circuit in Figure 507 is a hot filament check, that is, the LOR is checking a normally lighted signal.

Cold Filament Check, Searchlight Signal

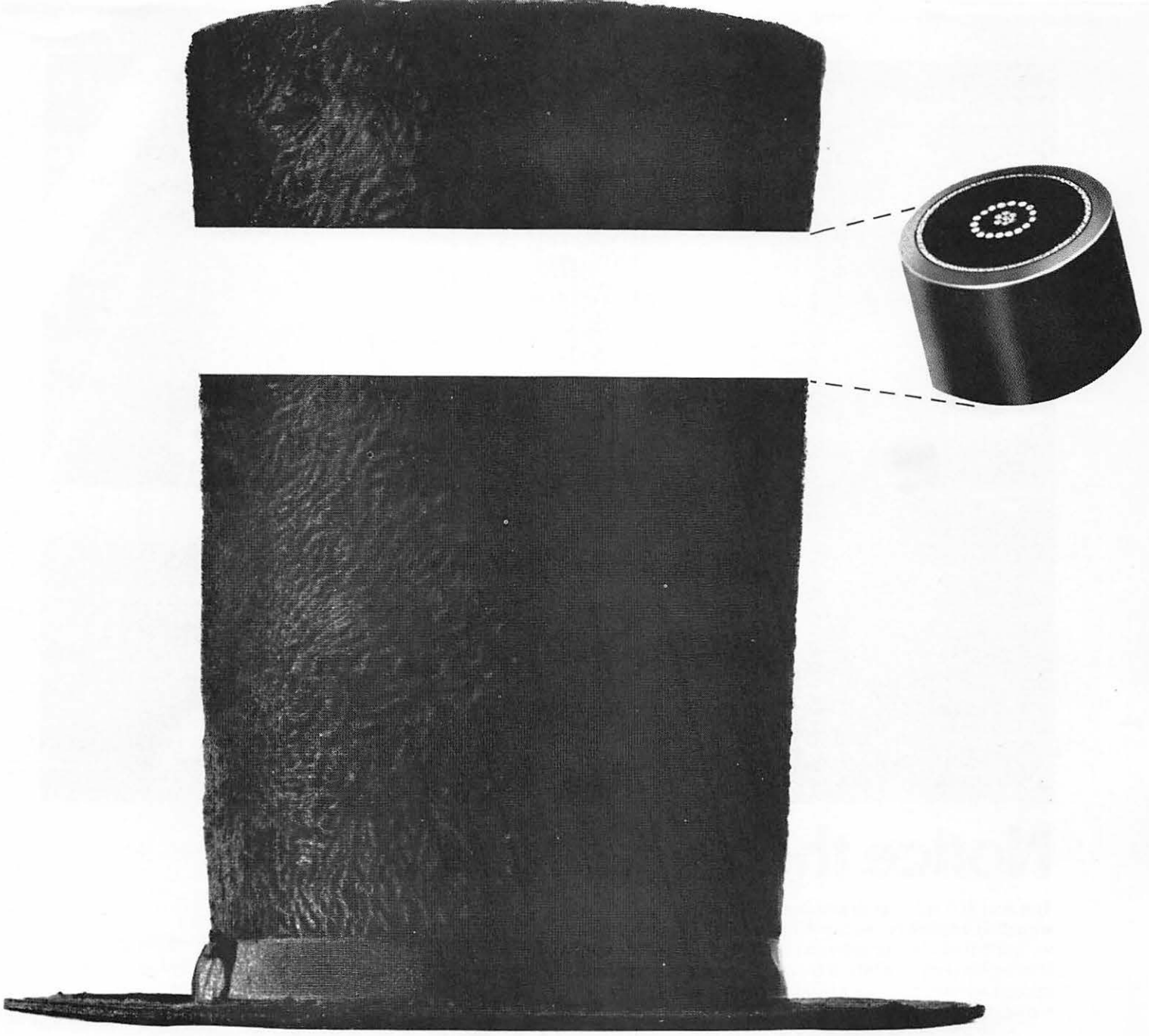
The circuits in Figure 508 are for light-out protection with G-R-S searchlight signals.

The circuit in Figure 508 utilizes the LOR relay to check a cold filament. The signals are normally not lighted. The light-out relay checks that the lamp filaments have not broken due to vibration or other causes. It is cut out of the circuit when a train arrives on the approach to the signal, dropping approach lighting relay AER. EBX is fed through a front contact on PTR, a back contact on AER, signal 1 lamp, a back contact on AER to return to ENX via another front contact on PTR. Should the a-c. supply fail, the PTR transfers the lamp from a.c. to d.c. Contacts on LOR are in the control circuit for signal 2. Thus, if the filament in signal 1 lamp is opened, the energy to signal 2 is pole changed, and signal 2 will display yellow upon the approach of a train.

Hot Filament Check, Searchlight Signal

In Figure 508, when lamp 1AE of signal unit 1A burns out, signal 3 will display a yellow indication, as contacts of LOR pole change the energy fed through contacts on yellow-green repeater 1YGPR and the track relays to signal 3. This circuit is arranged so that when power fails and PTR drops, signal 1 is approach lighted through a back contact on approach relay 1AR. This is done to conserve battery. This check, made with the signal lighted, is a hot filament check.

With the arrangements shown in Figure 508, the enginer would bring his train under control in the normal way rather than hurriedly when he suddenly realized that the indication of the signal he was approaching was not what past experience had accustomed him to expect. Thus an unnecessary emergency brake application is avoided.



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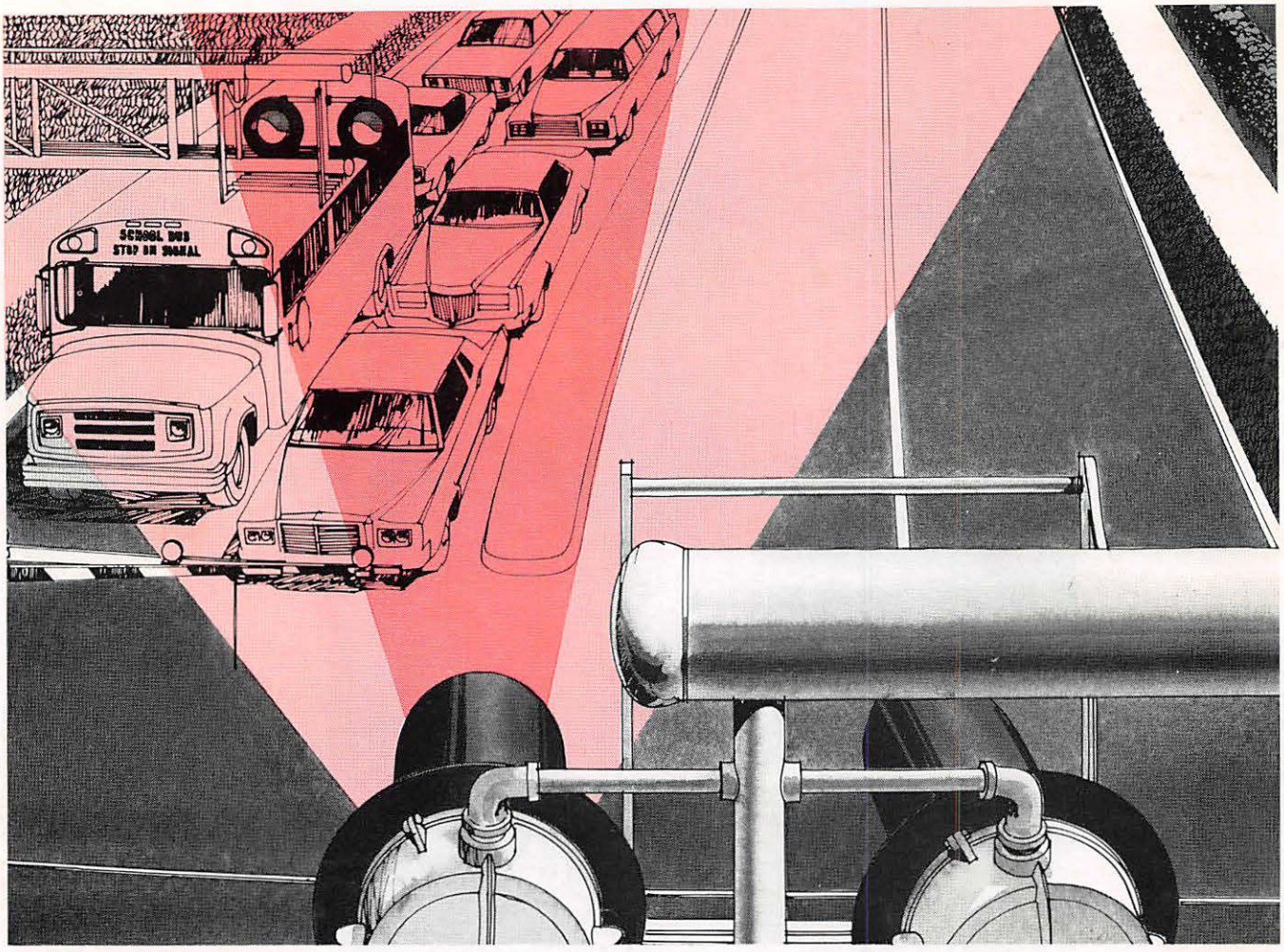

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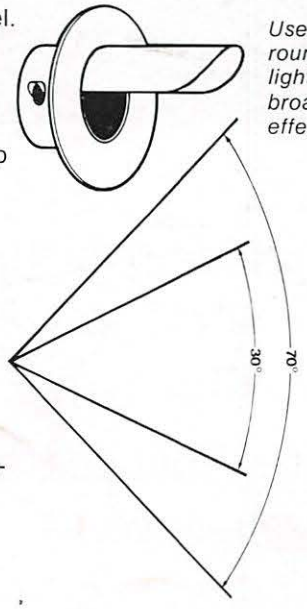

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